

The Vanishing Public Domain: Antibiotic Resistance, Pharmaceutical Innovation and Global Public Health

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Penicillin and other antibiotics were the original wonder drugs and laid the foundation of the modern pharmaceutical industry. Human health significantly improved with the introduction of antibiotics. By 1967, the US Surgeon General declared victory over infectious diseases in the US. But pride goes before a fall. The evolutionary pressure of antibiotic use selects for resistant strains with the least fitness cost. Effective drugs should be used. But when they are used, no matter how carefully, evolutionary pressure for resistance is created. The problem is not limited to antibiotics. Variants of the human immunodeficiency (AIDS) virus develop resistance to anti-retroviral drugs. Some pharmaceutical knowledge is exhaustible, a conclusion which upends the conventional wisdom for IP policy stretching back to Jefferson and beyond.

Unwilling to live in a post-antibiotic era, society deploys two strategies against resistance. One is research and development (R&D), allocating resources to discover new drugs. The other strategy is conservation, stewarding available antibiotic drugs and prolonging their useful therapeutic lives.

Both strategies face daunting challenges. R&D encounters diminishing returns when the easiest biological targets may have already been found. Echoing Malthus, some fear that science will not be able to keep ahead of resistance. Conservation faces the unhappy prospect of fighting an eternal rear-guard action, never winning, but merely postponing the inevitable. Even the best conservation schemes may eventually fall to resistance. Antibiotic resistance may be compared to running on a treadmill. R&D is learning how to run faster; conservation is slowing the treadmill down.

This Article describes the vanishing public domain of exhaustible pharmaceutical knowledge and begins a discussion of the public domain which extends far beyond copyright. Several prominent proposals address antibiotic resistance by strengthening patent law. I suggest a divergent approach, conserving exhaustible pharmaceutical knowledge so that the fruits of pharmaceutical innovation do not become the exclusive property of the rich, but remain the common heritage of humanity.